

CLAIMS

1. A method for the part purification of a desired protein from milk, the method comprising the transfer of protease enzyme which is present in the milk, into the whey phase with the removal or partition of the desired protein into another phase of the milk.
2. A method, as claimed in claim 1, wherein the desired protein is fibrinogen and the method is optionally followed by a method step comprising:
- (a) contacting the part purified fibrinogen with a hydrophobic interaction chromatography resin under conditions where the fibrinogen binds to the resin; and
- (b) removing the bound protein by means of elution.
3. A method for the part purification of a desired protein from milk, the method comprising precipitation of the desired protein in the presence of lysine or a lysine analogue.
4. A method, as claimed in claim 3, wherein the desired protein is fibrinogen and the method is optionally followed by a method step comprising:
- (a) contacting the part purified fibrinogen with a hydrophobic interaction chromatography resin under conditions where the fibrinogen binds to the resin; and
- (b) removing the bound protein by means of elution.
5. A method for obtaining fibrinogen from a fluid, the method comprising:

- (a) contacting the fluid with a hydrophobic interaction chromatography resin under conditions where the fibrinogen binds to the resin; and
- 5 (b) removing the bound protein by means of elution.

6. A method, as claimed in claim 5, wherein the fluid is milk and wherein the method is optionally preceded by a method step comprising the part purification of fibrinogen from milk, the method comprising the transfer of protease enzyme which is  
10 present in the milk, into the whey phase with the removal or partition of the fibrinogen into another phase of the milk.

7. A method for obtaining fibrinogen from a fluid, the method comprising:
- 15 (a) contacting the fluid with a hydrophobic interaction chromatography resin under conditions where the fibrinogen binds to the resin; and
- (b) removing the bound protein by means of elution.

20 8. A method, as claimed in claim 7, wherein the fluid is milk and wherein the method is optionally preceded by a method step comprising the part purification of fibrinogen from milk, comprising precipitation of the fibrinogen in the presence of lysine or a lysine analogue.

25 9. A method as claimed in any one of claims 1, 2 or 6, wherein the protease enzyme is plasmin and/or plasminogen.

10. A method as claimed in any one of claims 1, 2, 6 or 8, wherein the removal or partition of the desired protein is by precipitation.

11. A method as claimed in any one of claims 1, 2, 6 or 8, wherein the transfer of the protéase enzyme into the whey phase of the milk is by the presence of lysine or a lysine analogue
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12. A method, as claimed in any one of claims 1-4, 6, 8 or 9, 10, 11 (when dependent on 1-4, 6 or 8), wherein the milk is whole milk, skimmed milk, or milk fraction.
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13. A method, as claimed in any one of claims 1-4, 6, 8 or 9, 10, 11, 12 (when dependent on 1-4, 6 or 8), wherein the milk is derived from a sheep, cow, goat, rabbit, camel, water buffalo, pig or horse.
14. A method, as claimed in claim 13, wherein the transgenic fibrinogen is bovine or human derived.
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15. A method as claimed in any one of claims 1 to 4, or 9-14 (when dependent on 1-4), wherein the part purified protein is further purified by repeating the first step of each purification method.
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16. Transgenic fibrinogen, obtainable from milk, at least partly purified, having improved stability (in particular in respect of proteolysis) and/or increased integrity of the fibrinogen alpha chain.
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17. Transgenic fibrinogen obtainable by a method as claimed in any one of claims 1 to 16.
18. Transgenic fibrinogen substantially free from viral contamination.

19. Transgenic fibrinogen, as claimed in claim 16 or claim 17, comprising fibrinogen 1, fibrinogen 2, or a combination thereof.
20. A fibrin adhesive or sealant containing fibrinogen as claimed in any one of  
5 claims 16 to 19.
21. A fibrin adhesive or sealant as claimed in claim 20, which contains thrombin,  $\text{Ca}^{++}$  and Factor XIII.
- 10 22. A kit for a fibrin adhesive or sealant, comprising fibrinogen as claimed in any one of claims 16 to 21 together with Factor XIII and/or Factor XIIIa as one component and thrombin and  $\text{Ca}^{++}$  as a second component.
- 15 23. A method for producing a fibrin adhesive or sealant as claimed in claim 20 or claim 21, comprising admixing fibrinogen with thrombin.
24. Fibrinogen, as claimed in any one of claims 16 to 19, for use in medicine.
- 20 25. A fibrin adhesive or sealant, or kit, as claimed in any one of claims 19 to 22, for use in medicine.
- 25 26. A method of surgery or therapy comprising placing a fibrin adhesive or sealant, as claimed in any one of claims 19 or 20, on or within an animal or a body part of an animal.
27. A method as claimed in claim 26, wherein the animal is a human.
28. The use of fibrinogen, as claimed in any one of claims 16 to 19, in the manufacture of a fibrin adhesive or sealant.